

Summary.

The general results of the researches briefly detailed above may be summed up as follows.

The mandible has, as far as ascertained, essentially the same structure in *Rhizodopsis* as in *Rhizodus*. In both, the *dentary* element is narrow and pointed posteriorly, its upper margin bears one row of small teeth, while at the symphysis it is peculiarly thickened where it bears the first or anterior laniary. This bone, turned upside down, has, in *Rhizodopsis*, been previously considered to be the præmaxillary; the last-named element of the skull of that fish has now, however, been ascertained to be a different bone, which is quite similar in form and relations to the præmaxilla in other Crossopterygii.

The laniary teeth behind the anterior one are borne upon separate *internal dentary* ossicles, which, when the constituent elements of the lower jaw are broken up and separated, will also become disarticulated and dispersed. This is absolutely proved in *Rhizodus*, and may be considered morally certain in *Rhizodopsis*, though a clear view of the inner aspect of the complete mandible of the latter, with the posterior laniary teeth *in situ*, has not yet been obtained.

Below the dentary the inferior margin of the jaw is formed by a series of *infradentary* plates, while posteriorly the articular region is covered by a plate corresponding in position apparently both with the *angular* and *supraangular* elements. I may add that, in one specimen of *Rhizodopsis*, I have seen very distinct evidence of a *splénial*.

The great complexity of the structure of the mandible in these forms and in the allied "Dendrodonts" of the Old Red Sandstone need not astonish us when we take into account the remarkably segmented splénial of the recent *Amia*, or the similarly segmented maxilla of *Lepidosteus*.

XXVI.—Description of a new Form of Ophiuridæ from New Zealand. By EDGAR A. SMITH, F.Z.S., Zoological Department, British Museum.

[Plate XV.]

THERE are three specimens of this very remarkable form of Ophiuridæ in the British Museum—one presented by Major

Greenwood in 1850, and the two others by Captain Stokes, R.N., in 1855.

In general aspect it reminds one at once of the genus *Ophiocoma*, possessing a granular disk similar to that which obtains in that genus; and the characters of the arm-plates and of the true arm-spines are also congeneric; but the difference of the oral slits (rimæ) and the presence of two or more short flattened spines or scales which overlap one upon another and upon the uppermost true arm-spine, thus keeping them almost in a horizontal position, are characters which may be considered of sufficient importance to separate generically this curious species. The mouth-organs, namely the teeth proper, tooth-papillæ, and the jaws or framework which supports them, are exactly similar to those of the genus *Ophiothrix*; also the oral fissures are precisely like those of that genus—that is, are more in the form of wide holes than narrow slits as in *Ophiocoma*; and the first ambulacral tentacles are just within the rimæ and without scales. The side mouth-shields are likewise of the same character as in *Ophiothrix*, and are situated along the lower margins of the oral shields, as is almost invariably the case in that genus. However, the granular disk not showing radial shields, and the presence of mouth-papillæ, are differences which easily dissociate the present genus from it.

OPHIPTERIS *, gen. nov.

Disk covered with a granulous skin as in *Ophiocoma*; teeth, tooth-papillæ, oral and adoral shields, and the mouth-fissures as in *Ophiothrix*; oral papillæ present; brachial shields and true spines similar to *Ophiocoma*; the arms provided with 2–3 compressed imbricating scales or compressed spines above the uppermost spines; two genital slits; ambulacral scales present.

Ophiopterus antipodum, sp. nov.

Disk roundly subpentagonal, somewhat lobed between the rays, closely and coarsely granulated on the dorsal surface, and beneath on the interbrachial spaces covered with crowded short spines; rays $4\frac{1}{2}$ –5 times as long as the diameter of the disk; oral shields small, somewhat heart-shaped, with a slight point both on the inner and aboral sides; madreporic shield distinct, larger than the others, and lobed a little on each side; side

* ὄφις a snake and πτέρις a fern. The rays call to mind the appearance of certain kinds of ferns.

mouth-shields irregular, narrow, lying along the lower margins of the orals, and not quite meeting within; mouth-papillæ about six to each mouth-angle, three on each side, small, not at all conspicuous; tooth-papillæ very numerous, arranged in six vertical rows above, gradually diminishing until there are but two series where they meet the teeth; they extend far within the mouth, so that the teeth are not visible; the papillæ of the outer rows are a trifle longer than the intermediate ones, and increase in size as they approach the teeth, and those at the upper end of the tooth-column are very small and irregularly clustering. Teeth 5, subequal, roundly truncated at the ends and thicker in the middle than at their lateral edges.

Lower arm-plates at the border of the disk about twice as broad as long, gradually becoming proportionally longer as the end of the arm is approached; their form is irregularly heptagonal, the two sides towards the mouth sloping to a slight point; on the aboral side they are faintly excavated in the middle, and arcuately sloping on each side of this slight sinus towards the lateral margins, which are also concave; upper arm-plates remarkably flat, twice as broad as long, and gradually, like the lower ones, becoming proportionally longer towards the end of the ray; in form they are transversely oblong, sharply pointed on each side, the points fitting in between the very narrow lateral plates; the latter just meet below between the lower arm-plates, but not quite above; arm-spines in four series (near the disk sometimes five), the lowest the shortest, the uppermost but one the longest, and the other two about equal in length, but the uppermost one the stoutest; all the spines are rather flattened, not acutely pointed, and much compressed at the tips and truncated. Above the base of each spine of the uppermost series are two (here and there three) short, broad, compressed spines or scales one upon another, the one nearest the lateral spine the largest and about a fourth its length; one tentacle-scale, small, roundish; genital slits two in each interbrachial space, extending from the margin of the disks to the oral shields.

The colour above is uniformly dull brown, and beneath the rays and ray-spines rather paler. The interbrachial spaces below are dark like the dorsal surface.

Diameter of the disk about 26 millims.; width of upper arm-plates 3, of lower ones $2\frac{1}{2}$; length of longest spine $5\frac{1}{2}$.

Remarks. The form of the mouth-shields is subject to considerable variation. In the largest specimen they are almost as long as broad, whilst in a smaller one they are much broader than long.

The chewing-apparatus might be said to consist of a great number of teeth of various sizes. The lowest ones, five in number, one above another, are very much larger than the rest; above these are two, side by side, about half the size of the preceding, which are the commencement of the two series which bound the cluster of minute teeth (tooth-papillæ) on either side; and they gradually diminish in size upward. The teeth or papillæ between these series are very small and arranged above in four vertical rows, then lower down in three and two series, and gradually diminish downwards within the mouth to a single papilla. The mouth-papillæ are very small indeed, short, cylindrical, and vary from three to five on each side of each of the five mouth-angles or tooth-columns. They are hardly distinguishable from the tooth-papillæ, as they are situated close together near the apex of the column.

EXPLANATION OF PLATE XV.

Fig. 1. Upper surface, of natural size.

Fig. 2. Lower surface.

Fig. 3. Part of underside of an arm, enlarged.

Fig. 4. Part of upperside.

Fig. 5. A Madreporic shield: *b, c*, two forms of oral shields.

XXVII.—*The Vates Ashmolianus of Westwood, the Type of a new Genus of Mantidæ.* By Prof. J. WOOD-MASON.

ÆTHALOCHROA, gen. nov.

♂ ♀. Sexes alike. Body greatly elongated, linear. Head small, rather higher than broad; vertex of considerable antero-posterior extent, its lateral lobes produced into a conoidal boss behind each eye, the central division of its median lobe with a low transversely convex elevation (answering to the well-developed process seen in *Blepharis* and *Phyllocrania*) ending abruptly over the ocelli; eyes much as in *Blepharis mendica*, but not quite so forwardly projecting; ocelli slightly oval, conspicuous, prominent, mounted on short pillars, in the male distinctly differentiated into pupil and iris; facial shield broader than high, pentagonal, inclining to be trefoil-shaped, its upper margin slightly produced to a projecting point in the middle, with a faint ridge on each side near and parallel to the lateral margins; "chaperon" strongly transversely carinate. Antennæ short and setaceous. Prothorax greatly elon-